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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,504	10/29/2003	Carsten Michaelson	P8073US	8159

7590 05/02/2005  
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EXAMINER

HO, ALLEN C

ART UNIT PAPER NUMBER

2882

DATE MAILED: 05/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/695,504

Applicant(s)

MICHAELSEN ET AL.

Examiner

Allen C. Ho

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>102003, 112004</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the continuously changing thickness of successive layers along the x-direction as claimed in claims 6-10 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

*Specification*

2. The disclosure is objected to because of the following informalities:

Page 19, line 17, "54" should be replaced by --55--.

Appropriate correction is required.

*Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-5, 11, 12, and 15-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Gutman *et al.* (U. S. Patent No. 6,014,423).

With regard to claim 1, Gutman *et al.* disclosed a reflector for x-ray radiation, the reflector comprising: means (12a, 18b) defining a first non-circular arc shape along a first cross section, the first cross section extending in an XZ plane containing an X direction; and means (12b, 18a) defining a second non-circular arc shape along a second cross section, the second cross section extending in a YZ plane perpendicular to the X direction (column 2, lines 32-41; column 3, lines 34-38).

With regard to claims 2 and 3, Gutman *et al.* disclosed the reflector of claim 1, wherein the second arc shape of the reflector along the second cross section defines focusing properties in the YZ plane (Figs. 1 and 4).

With regard to claim 4, Gutman *et al.* disclosed the reflector of claim 1, wherein the first and the second arc shapes focus or render parallel in two-dimensions (column 2, lines 32-41).

With regard to claim 5, Gutman *et al.* disclosed the reflector of claim 1, wherein the first arc shape is parabolic, hyperbolic, or elliptic along the first cross-section (column 2, lines 32-41).

With regard to claim 11, Gutman *et al.* disclosed the reflector of claim 1, wherein the second arc shape has an elliptic curvature of different lengths of semi-axes along the second cross-section (column 2, lines 32-41. This is the definition of an ellipse; otherwise it would be a circle).

With regard to claim 12, Gutman *et al.* disclosed the reflector of claim 1, wherein the second arc shape has a parabolic curvature along the second cross section (column 2, lines 32-41).

With regard to claim 15, Gutman *et al.* disclosed an x-ray analysis device comprising: an x-ray source (10); optical shaping and/or delimiting means (a collimator is required to operate a point x-ray source); and the reflector of claim 1.

With regard to claim 16, Gutman *et al.* disclosed the x-ray analysis device of claim 15, wherein x-ray radiation impinges on the reflector at an angle of less than 5° with respect to the x-direction (at glancing angle).

With regard to claim 17, Gutman *et al.* disclosed the x-ray analysis device of claim 15, wherein a curvature of the reflector along the second cross-section is formed such that a

reflectivity of the reflector is maximum for a wavelength of radiation generated by the x-ray source (This is simply Bragg diffraction. Column 3, lines 56-58).

With regard to claims 18 and 19, Gutman *et al.* disclosed the x-ray analysis device of claim 15, wherein the reflector focuses x-ray radiation to a focal spot (Figs. 1, 4).

With regard to claims 20 and 21, Gutman *et al.* disclosed the x-ray analysis device of claim 15, wherein the certain ray divergence generates parallel rays (column 2, lines 32-41).

5. Claims 1-3, 5-11, and 15-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi *et al.* (U. S. Patent No. 6,249,566 B1).

With regard to claim 1, Hayashi *et al.* disclosed a reflector for x-ray radiation, the reflector comprising: means (40) defining a first non-circular arc shape along a first cross section, the first cross section extending in an XZ plane containing an X direction; and means (38) defining a second non-circular arc shape along a second cross section, the second cross section extending in a YZ plane perpendicular to the X direction (column 10, lines 45-46).

With regard to claims 2 and 3, Hayashi *et al.* disclosed the reflector of claim 1, wherein the second arc shape of the reflector along the second cross section defines focusing properties in the YZ plane (44).

With regard to claim 5, Hayashi *et al.* disclosed the reflector of claim 1, wherein the first arc shape is parabolic, hyperbolic, or elliptic along the first cross-section (column 10, lines 45-46).

With regard to claims 6-10, Hayashi *et al.* disclosed the reflector of claim 1, further comprising a periodically repeating sequence of layers of materials with different refractive indices, wherein a sum of thickness of successive layers of the materials change continuously

along the X-direction (column 11, line 29 - column 12, line 27), wherein the sum changes monotonically (last column in table 3).

With regard to claim 11, Hayashi *et al.* disclosed the reflector of claim 1, wherein the second arc shape has an elliptic curvature of different lengths of semi-axes along the second cross-section (This is the definition of an ellipse; otherwise it would be a circle).

With regard to claim 15, Hayashi *et al.* disclosed an x-ray analysis device comprising: an x-ray source (32); optical shaping and/or delimiting means (a collimator is required to operate a point x-ray source); and the reflector of claim 1.

With regard to claim 16, Hayashi *et al.* disclosed the x-ray analysis device of claim 15, wherein x-ray radiation impinges on the reflector at an angle of less than 5° with respect to the x-direction (at glancing angle).

With regard to claim 17, Hayashi *et al.* disclosed the x-ray analysis device of claim 15, wherein a curvature of the reflector along the second cross-section is formed such that a reflectivity of the reflector is maximum for a wavelength of radiation generated by the x-ray source (This is simply Bragg diffraction. column 2, lines 50 - column 3, line 11).

With regard to claims 18 and 19, Hayashi *et al.* disclosed the x-ray analysis device of claim 15, wherein the reflector focuses x-ray radiation to a focal spot (44).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gutman *et al.* (U. S. Patent No. 6,014,423) or Hayashi *et al.* (U. S. Patent No. 6,249,566 B1) as applied to claim 1 above.

With regard to claims 13 and 14, Gutman *et al.* and Hayashi *et al.* disclosed the reflector of claim 1. However, Gutman *et al.* and Hayashi *et al.* failed to disclose that the reflector has a reflecting surface width of at least 4mm.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a reflecting surface width of at least 4mm, since a person would be motivated to provide a reflecting surface that is dimensioned to capture x-rays according to application requirement.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- (1) Hayashi *et al.* (U. S. Patent No. 6,823,042 B2) disclosed an apparatus for x-ray analysis.
- (2) Antonell *et al.* (U. S. Patent No. 6,606,371 B2) disclosed an x-ray sytem.
- (3) Taguchi *et al.* (U. S. Patent No. 6,529,578 B1) disclosed an x-ray condenser.
- (4) Iwasaki *et al.* (U. S. Patent No. 6,504,902 B2) disclosed an x-ray optical device and multilayer mirror.



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- (5) Chen (U. S. Patent No. 6,317,483 B1) disclosed a doubly curved optical device with graded atomic planes.
- (6) Gutman *et al.* (U. S. Patent No. 6,041,099) disclosed a single corner Kirkpatrick-Baez beam conditioning optic assembly.
- (7) Adema *et al.* (U. S. Patent No. 4,780,899) disclosed a crystal for x-ray analysis.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached at (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Allen C. Ho  
Primary Examiner  
Art Unit 2882

29 April 2005